

## Susquehanna 2

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### Initiating Events

**Significance:**  Dec 01, 2000

Identified By: NRC

Item Type: FIN Finding

#### **Identification and Problem Resolution Effectiveness of Corrective Actions**

The inspectors identified a finding regarding the effectiveness of corrective actions for breaker over-current protection relays. In 1998, PPL established a relay replacement schedule for over-current protection relays due to a manufacturing defect. PPL did not re-evaluate the effectiveness of the relay replacement schedule following two electro-hydraulic control (EHC) system pump trips due to over-current protection relay failures. This condition is more than minor because the EHC pump malfunction could contribute to the likelihood of a reactor trip, and since EHC is required to maintain the turbine bypass valves open, it could affect a mitigating system used to remove reactor core decay heat. The risk of this finding was determined to be low since multiple mitigating systems (high pressure injection system, low pressure injection system and automatic depressurization system) remained available to respond to a transient. The EHC system is not safety-related and no violations of NRC requirements were identified. This is a cross-cutting issue covering two cornerstones. It also covers Mitigation systems.

Inspection Report# : [2000006\(pdf\)](#)

**Significance:**  Jun 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Off-Normal Operation Procedure for Reactor Pressure Control**

On June 14, the inspectors observed that Unit 2 reactor pressure control was swapped over from the "A" electro-hydraulic control system pressure regulator to the "B" regulator, due to drift on the "A" regulator. The instrument and controls technicians performed the activity with no written instructions or procedures, and were under the direct technical supervision of a system engineer. This issue was considered to have very low safety significance because the verbal technical direction provided by the system engineer to the instrument and controls technicians was adequate, in this instance, to control the activity. The inspectors identified a Non-Cited Violation for failure to satisfy Technical Specification requirements to implement written procedures.

Inspection Report# : [2000004\(pdf\)](#)

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### Mitigating Systems

**Significance:**  Aug 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Fire Barrier Surveillance**

The inspectors identified a Green non-cited violation of License Condition 2.C(6) of operating license NPF-14 (Unit 1) and License Condition 2.C.3 of operating license NPF-22 (Unit 2) because PPL failed to identify and correct degraded gypsum board during the surveillance of the upper cable spreading room (UCSR) structural fire barriers. This surveillance was conducted on April 30, 2002, in accordance with Procedure SE-013-007, "24 Month Inspection of Unit Common Fire Barriers," and the provisions of section 1.4.2, "Compliance," of the approved fire protection program described in the Susquehanna Steam Electric Station (SSES) Fire Protection Review Report (FPRR). The

failure to identify and correct degraded fire barriers could result in a fire impacting multiple fire areas thereby having an adverse impact on safety. This finding was of very low safety significance (Green) because the likelihood of occurrence of a fire that could damage safety-related equipment in this area and propagate to other areas is small, and because equipment and procedures were available to shutdown the plants from the control room.

Inspection Report# : [2002008\(pdf\)](#)

G

**Significance:** Aug 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate UCSR Under-Floor CO2 Suppression System**

The inspectors identified a Green non-cited violation of License Condition 2.C(6) of operating license NPF-14 (Unit 1) and License Condition 2.C.3 of operating license NPF-22 (Unit 2) because PPL could not demonstrate that the Units 1 and 2 total flooding CO2 system would be able to reach and maintain the required concentration of CO2 to extinguish a deep seated fire affecting the Units UCSR under-floor area. The need to reach and maintain the required CO2 concentrations are established by NFPA 12 "Standard on Carbon Dioxide Extinguishing Systems," (1973 Edition) and required by the SSES FPRR. The failure to ensure the design adequacy of the CO2 systems could result in a more challenging fire which would stress the remaining defense-in-depth elements and, thereby, have an adverse impact on safety. This finding was of very low safety significance (Green) because the likelihood of occurrence of a fire that could damage safety-related equipment in the UCSRs under-floor area is small, and equipment and procedures were available to shutdown the plants from the control room.

Inspection Report# : [2002008\(pdf\)](#)

G

**Significance:** Aug 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate UCSR and LCSR Pre-Action Sprinkler System**

The inspectors identified a Green non-cited violation of License Condition 2.C(6) of operating license NPF-14 (Unit 1) and License Condition 2.C.3 of operating license NPF-22 (Unit 2) because PPL could not demonstrate that the pre-action sprinkler system in the Units 1 and 2 UCSRs and lower cable spreading rooms (LCSR) met the requirements of NFPA 13, "Standard for the Installation of Sprinkler Systems" with regard to the placement of the sprinkler heads, area of sprinkler head coverage and obstruction of the sprinkler heads. NFPA 13 (1974 Edition) is the SSES code of record for the pre-action sprinkler system and required by the SSES FPRR. The failure to ensure the design adequacy of the pre-action sprinkler systems could result in a more challenging fire which would stress the remaining defense-in-depth elements and thereby have an adverse impact on safety. This finding was of very low safety significance (Green) because the likelihood of occurrence of a fire that could damage safety-related equipment in the affected areas is small, and equipment and procedures were available to shutdown the plants from the control room.

Inspection Report# : [2002008\(pdf\)](#)

G

**Significance:** Mar 30, 2002

Identified By: Licensee

Item Type: NCV NonCited Violation

**Common safety system loads not transferred to Unit 2 125V DC control power as required by procedure**

Common safety system loads were not transferred to Unit 2 125V DC control power as required by procedure. Technical Specification 5.4.1 stated, in part, "written procedures shall be established, implemented, and maintained" that meet the requirements of NRC Regulatory Guide 1.33, revision 2, Appendix A, February 1978. Operations procedure OP-102-002, "Operations of 125V DC Common Load Manual Transfer Switches," section 3.1.3 required that common loads are transferred to the alternate source in accordance with Attachment J, "Battery 1D620 Common Load Transfer Switches." On March 12, 2002, the 1D620 battery (Unit 1 DC power source) was removed from service and the common loads, listed on page 1 of Appendix J, were not transferred to the alternate source, as required. Violations of very low safety significance (Green) which were identified by PPL have been reviewed by the inspectors. Corrective actions taken or planned by PPL have been entered into PPL's corrective action program. This issue also

covers Barrier Integrity.

Inspection Report# : [2002002\(pdf\)](#)

**Significance:**  Feb 09, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

**Three operating procedures were incorrectly revised after a modification was installed on Unit 2 to change source of power for Division 1 automatic depressurization system SRV solenoid valves**

The inspector identified a non-cited violation of 10 CFR 50, Appendix B, Criterion III, Design Control. Three operating procedures were incorrectly revised after modification 225635 was installed on Unit 2 to change the source of power for Division 1 automatic depressurization system safety relief valve solenoid valves. The finding was of very low safety significance since there was no actual loss of the Division 1 automatic depressurization system safety function and PPL entered this finding into the corrective action program.

Inspection Report# : [2001012\(pdf\)](#)

**Significance:**  Nov 17, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

**Six of eight safety relief valves failed to satisfy the Technical Specification requirements for as-found opening setpoint**

Technical Specification (TS) 3.4.3, "Safety Relief Valves (SRVs)," required an allowable pressure band of +/- 1% for opening individual SRVs. Six of eight SRVs tested for Unit 2 on April 12, 2001, opened outside of the TS band, as described in condition report 327430.

Inspection Report# : [2001010\(pdf\)](#)

**Significance:**  Jun 30, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

**No procedure to maintain the environmental qualification associated with T-drains on motors inside primary containment**

The inspectors identified a non-cited violation for failure to have procedures or instructions to maintain the required environmental qualification configuration associated with motor T-drains for motor-operated valve actuators located within the primary containment (10 CFR 50 Appendix B, Criterion III, "Design Control") This violation was of very low safety significance because the specific component qualification deficiency was determined not to result in a loss of safety function, and therefore, did not impact system or component operability. In addition, the finding did not represent an actual open pathway in the primary containment since the redundant isolation valves, located outside of the primary containment, were not affected and remained operable. This issue also covers Barrier Integrity

Inspection Report# : [2001006\(pdf\)](#)

**Significance:**  May 12, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to include and conduct appropriate valve testing in the IST Program as required by Technical Specification 5.5.6**

The inspectors identified a Non-cited violation of Technical Specifications 5.5.6, "In-service Testing Program," for failure to leak test eight reactor building closed cooling water system and eight turbine building closed cooling water system valves. This finding was of very low safety significance because the leakage through the valves was subsequently determined to be less than the maximum flow that can be diverted from the emergency service water system to non-safety related loads during an accident.

Inspection Report# : [2001005\(pdf\)](#)

**Significance:**  Apr 06, 2001

Identified By: NRC

Item Type: FIN Finding

**Inadequate Corrective Action to Preclude Recurrence of SLC Pump Discharge Pressure Relief Valve Setpoint Drift**

The team found that the as-found relief setpoints of the Unit 1 SLC pump discharge valves were outside the specified tolerance 20 of the 27 times the in-service test (IST) of the valves was conducted. The failure rate of the Unit 2 valves was similarly high. The team determined that the recurrence of the setpoint drift outside the valve performance criteria was of very low risk significance (Green) by the SDP screening process. This conclusion was based on the fact that the licensee's engineering assessment determined that even with both relief valves lifting, sufficient boron solution would be injected in the reactor to maintain the integrity of the RPV, fuel, and containment barriers.

Inspection Report# : [2001004\(pdf\)](#)

**Significance:**  Apr 06, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

**Non-Conservative Test Acceptance Criteria for RCIC System Surveillance**

The team found that the reactor core isolation cooling (RCIC) pump in-service test acceptance criteria was non-conservative because it would not have ensured that the system design function was maintained. This was determined to be of very low risk significance (Green) by the significance determination process (SDP) phase 1 screening because an actual loss of the system safety function had not occurred. The failure to establish adequate test acceptance criteria for the RCIC pump was considered a non-cited violation of 10CFR50, Appendix B, Criterion XI, Test Control.

Inspection Report# : [2001004\(pdf\)](#)

**Significance:**  Apr 06, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Meet ATWS Rule in the Design of SLC System**

The team determined that during an anticipated transient without scram (ATWS) loss-of-offsite power (LOOP) scenario, the standby liquid control (SLC) system would not satisfy the ATWS rule requirement in that one or both SLC pump relief valves could lift and inhibit full flow to the reactor. The team determined this issue to be of very low risk significance (Green) through phase I of the SDP screening process. This conclusion was based upon the fact that the licensee's engineering assessment determined that, even with both relief valves lifting, sufficient boron solution would be injected in the reactor to maintain the integrity of the fuel, reactor pressure vessel, and containment barriers. In addition, the event itself has a low occurrence probability. The failure by the licensee to ensure that the required ATWS rule flow rate would be injected into the reactor vessel was considered a non-cited violation of 10CFR50.62.

Inspection Report# : [2001004\(pdf\)](#)

**Significance:**  Apr 06, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Test the Motor Operated Valve Thermal Overload Bypass Circuit**

The team found that the licensee had neither tested nor developed test procedures that verified the ability of the safety-related motor operated valve (MOV) thermal overloads (TOLs) bypass relay contacts to perform their bypass function. The team also found that the TOL setpoints had not been selected to ensure that the valves would be able to perform their safety-related function. The team determined that the licensee's failure to test the TOL bypasses periodically was of very low risk significance (Green) by the SDP screening process. This determination was based upon the results of a

subsequent PPL analysis and test conclusions that the current sizing of all TOLs provided reasonable assurance of operability of the affected valves. The failure by the licensee to verify the integrity of the bypass circuit was considered an additional example of a non-cited violation of 10CFR50, Appendix B, Criterion XI, Test Control.

Inspection Report# : [2001004\(pdf\)](#)

**Significance:**  Dec 31, 2000

Identified By: NRC

Item Type: FIN Finding

**HPCI Operation After a Main Steam Isolation Valve Closure Transient Without Automatic Reactor Shutdown**

PPL has not taken timely actions to resolve an issue regarding the ability of the high pressure coolant injection (HPCI) system to respond to a transient in which the main steam line isolation valves close and the reactor does not automatically shut down. Since 1991, PPL documents have recognized: that continued HPCI operation during this transient requires prompt operator action outside of the control room to bypass high suppression pool level signals to prevent HPCI valves from automatically changing the HPCI suction source from the condensate storage tank to the suppression pool; it was unreasonable to expect that the specified prompt operator actions would be reliably completed within the required time; and that this automatic HPCI suction transfer feature should be removed. To date, PPL has not removed this automatic HPCI suction transfer feature. A phase 2 significance determination process assessment concluded that this issue was very low safety significance based on the availability of safety relief valves and low pressure injection systems to respond if HPCI failed

Inspection Report# : [2000009\(pdf\)](#)

**Significance:**  Dec 31, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

**Post Accident Residual Heat Removal System Operation**

The inspectors identified a Non-Cited Violation for inadequate alarm response procedures related to residual heat removal service water radiation monitors. The alarm response procedures were inadequate because, although residual heat removal service water process radiation levels are not expected to be high, the expected area background radiation levels during a loss of coolant accident would cause the radiation monitors to alarm and the procedures would then direct the operator to inappropriately shut down the residual heat removal and residual heat removal service water systems when they were required to mitigate the accident. This finding was determined to be of very low risk significance because sufficient information was available for operators to recognize that these alarms were due to background radiation and not cause the systems to be shutdown.

Inspection Report# : [2000009\(pdf\)](#)

**Significance:**  Dec 01, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

**10CFR50, App B, Crit XVI violation. PPL failed to identify the cause of relay failures in October 1998 and April 2000, and to preclude recurrence of a subsequent relay failure affecting the RHR system**

The inspectors identified a Non-Cited Violation of 10CFR50, Appendix B, Criterion XVI, due to an inadequate determination of the cause of a significant condition adverse to quality. Specifically, the cause identified by PPL of MDR relay failures, a significant condition adverse to quality, in the containment radiation monitoring system was unsupported. The risk of this finding was determined to be low since the frequency of the relay failures is unlikely to affect more than one equipment component at a time, the failed relays have been replaced, and surveillance tests periodically demonstrate the relays will perform their function. This is a cross-cutting issue covering two cornerstones. It also covers Barrier Integrity.

Inspection Report# : [2000006\(pdf\)](#)



**Significance:**  Nov 11, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

**Multiple Test Failures of Main Steam Safety Relief Valves**

Technical Specification (TS) 3.4.3, "Safety Relief Valves (SRVs)," requires an allowable pressure band of +/- 1% for opening individual SRVs. Five of eight SRVs tested on April 14, 2000, opened outside of the TS band, as described in condition report 249300.

Inspection Report# : [2000008\(pdf\)](#)

**Significance:**  Jun 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

**High Pressure Coolant Injection System Post Maintenance Testing**

In December 1999, the Unit 2 high pressure coolant injection (HPCI) system had an unexpected stop valve closure during a routine surveillance test. PPL failed to identify that the stop valve had closed, until after the stop valve again unexpectedly closed on April 5, 2000. On June 9, 2000, the NRC identified that PPL over-pressurized portions of the Unit 2 HPCI system during testing. PPL did not perform an operability determination or enter the over-pressure event into the corrective actions system until June 14. These issues were of very low safety significance because HPCI was able to perform its design function. The inspectors identified a Non-Cited Violation for failure to promptly identify and correct conditions adverse to quality.

Inspection Report# : [2000004\(pdf\)](#)

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## Barrier Integrity

**Significance:**  Mar 30, 2002

Identified By: Licensee

Item Type: NCV NonCited Violation

**Control room emergency outside air supply system inoperable due to Unit 1 4kV emergency bus breakers not seismically restrained**

During this inspection NPOs did not install seismic restraints during racking out of two 4 kV breakers which resulted in two Unit 1 4kV emergency buses becoming inoperable but still available. NPOs did not perform a section in an operations procedure regarding installing of seismic restraints. (Licensee identified NCV affecting the Mitigating System and Barrier Integrity Cornerstones) Violations of very low safety significance (Green) which were identified by PPL have been reviewed by the inspectors. Corrective actions taken or planned by PPL have been entered into PPL's corrective action program. This issue also covers Mitigating Systems.

Inspection Report# : [2002002\(pdf\)](#)

**Significance:**  Nov 17, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

**Secondary Containment Bypass Leakage exceeded the Technical Specification limit**

Technical Specification 3.6.1.3, "Primary Containment Isolation Valves," specified that the combined leakage rate for all Secondary Containment Bypass Leakage (SCBL) paths shall not exceed 9 scfh. On March 19, 2001, the as-found SCBL for Unit 2 was 11.13 scfh.

Inspection Report# : [2001010\(pdf\)](#)

**Significance:**  Feb 10, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

**Unit 2 Reactor Core Isolation Cooling System Inboard Steam Supply Primary Containment Isolation Valve Failed to Close**

On February 1, 2001, the NRC identified that for an 8 hour period PPL staff had sufficient information to declare the Unit-2 reactor core isolation cooling inboard steam supply primary containment isolation valve inoperable but did not declare the valve inoperable. During that time period PPL did not complete required actions in Technical Specification 3.6.1.3 "Primary Containment Isolation Valves," to close and de-activate another automatic valve in the flow path within four hours. A non-cited violation was identified because the 8 hour time period between the occurrence of the inoperable valve and PPL's declaration (discovery) that the valve was inoperable exceeded the four hour time period allowed in technical specification to complete required actions. This violation was considered to have very low safety significance using the Significance Determination Process because, the barrier function of the control room was not effected and the finding did not represent an actual open pathway in the primary containment since the redundant isolation valve remained operable or closed during this event.

Inspection Report# : [2001002\(pdf\)](#)

**Significance:**  Dec 31, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

**Technical Specification Interpretation Incorrect - Operation Prohibited by Technical Specifications**

Technical Specification 3.6.1.3, required that a primary containment penetration be isolated within 4 hours, if the associated primary containment isolation valve (PCIV) was not operable. Contrary to this, from April 11 to 14, 2000, a PCIV for a Unit 2 hydrogen-oxygen analyzer was not operable, and the penetration was not isolated.

Inspection Report# : [2000009\(pdf\)](#)

**Significance:**  Aug 12, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

**Missed Surveillance Testing on the Hydrogen/Oxygen Analyzer Systems**

On February 2, 2000, PPL identified that Technical Specification required leakage rate surveillance testing had not been performed on the Unit 1 or Unit 2 Hydrogen/Oxygen Analyzer System or the Post Accident Sampling System. This issue was of very low safety significance because the likelihood of an accident leading to core damage was not affected, the probability of early primary containment failure was negligible, and the as-found leakage results for these systems in both units was determined to be acceptable. The inspectors identified a Non-Cited Violation for failure to perform leakage rate testing as required by Technical Specification 5.5.12, "Primary Containment Leakage Rate Testing Program 10 CFR 50 Appendix J."

Inspection Report# : [2000005\(pdf\)](#)

**Significance:**  May 13, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

**Invalid Local Leak Rate Tests for Testable Spectacle Flanges**

PPL, Inc (PPL) determined that Unit 1 and Unit 2 residual heat removal system spectacle flanges did not have valid leakage tests as required by technical specifications because an extra o-ring was installed which may have prevented the performance of a valid leakage test. This was of very low safety significance because the extra o-ring had little effect on the leak tightness of the flanged connection (containment integrity) and significant margin existed to technical specification leakage limits. The inspectors identified a noncited violation for not having performed valid technical specification required leakage tests. Unit 1 properly leak tested the flanges during the refueling outage. For Unit 2,

since it was at power, PPL requested that the NRC exercise discretion to not enforce compliance with the actions required in the technical specification to shutdown the unit. The NRC issued enforcement discretion since this condition had minimal safety impact, was consistent with the enforcement policy and staff guidance, and had no adverse impact on the health and safety of the public.

Inspection Report# : [2000003\(pdf\)](#)

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## Emergency Preparedness

**Significance:**  Feb 04, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

### **E-Plan changes decreased the effectiveness of the plan**

The inspectors identified a non-cited violation of 10 CFR 50.54(q) because PPL made changes in the E-Plan which eliminated some on-shift emergency positions which decreased the effectiveness of the E-Plan without obtaining prior NRC approval. The finding was of very low safety significance because the change was administrative in nature since individuals on-shift could have performed the functions of those eliminated positions had they been needed for emergency response.

Inspection Report# : [2002009\(pdf\)](#)

**Significance:**  Oct 11, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Identify Performance Deficiencies by an In-Plant Repair Team**

The inspectors identified a finding of very low safety significance (Green) that is also a non-cited violation of 10 CFR 50.47(b)(14) and Appendix E.IV.F.2.g., formal critiques shall identify weak or deficient areas that need correction. The licensee failed to identify an exercise deficiency regarding the inadequate performance of an in-plant repair team in performing a critical task to stop the off-site release during the biennial full scale exercise. Consequently, the repair team was exposed to a higher (simulated) dose than necessary and an opportunity to stop the off-site release was significantly delayed. This finding was determined to be of very low safety significance (Green) by the using the Emergency Preparedness (EP) SDP, Manual Chapter 0609, EP Risk Determination Flow Chart, Sheet 1, Second Column because the finding was identified during an EP exercise with simulated activities and is associated with the failure to identify a problem associated with a non-risk significant planning standard. This finding is more than minor because it could be reasonably viewed as a precursor to a significant event in that had this been an actual event, PPL could have missed an opportunity to quickly stop a radiological release to the public and to minimize the dose exposure to their emergency workers.

Inspection Report# : [2002011\(pdf\)](#)

**Significance:**  Sep 30, 2001

Identified By: NRC

Item Type: VIO Violation

### **Not maintaining minimum on-shift staffing in accordance with the E-Plan**

This inspection identified a violation of planning standard 10 CFR 50.47(b)(2) because on several occasions in 2000 and 2001, PPL's operation on-shift staff was below the minimum staffing requirements specified in the Emergency Plan for the positions of plant control operator and the assistant unit supervisor. The safety significance of this finding was of low to moderate safety significance because, on these occasions, the emergency preparedness function associated with these on-shift staff positions was not met. The emergency preparedness function that was not met associated with the plant control operator was either the emergency communicator function in the control room or the function to monitor for safety in the unaffected unit during an emergency at the site. The emergency preparedness function that



was not met associated with the assistant unit supervisor was that of the operations support center coordinator. The NRC issued the results of the final significance determination in a letter dated September 13, 2001. The NRC conducted a supplemental inspection in IR 50-387/02-09, 50-388/02-09 using inspection procedure 95001, to assess PPL's evaluation associated with a violation of White significance which was identified in Inspection Report 50-387/01-06, 50-388/01-06. The NRC identified that on several occasions, PPL's on-shift staffing was below the minimum requirements of the E-Plan. The NRC identified that the root cause evaluation was narrowly focused which resulted in the licensee not conducting a thorough review to understand the causal factors contributing to the violation. Therefore, it was not evident that the problems associated with this issue were sufficiently understood to provide reasonable assurance that the corrective actions would prevent recurrence. Consequently, the NRC was not able to complete the inspection objectives. The finding will continue to be considered in our assessment process until the appropriate supplemental inspection has been completed and we have determined that PPL's actions relative to root cause determination, extent of condition and corrective actions are appropriate. As a result the event date has been changed from 6/30/01 to 9/30/01 to keep the finding active in our assessment process. The NRC performed this supplemental inspection to assess the licensee's evaluation regarding on several occasions during 1999-2002 on-shift staffing went below the minimum requirements of the emergency plan. This performance issue was previously characterized as having low to moderate risk significance ("white") in NRC Inspection Report No. 50-387/01-006, 50-388/01-006. Last January 2002, a previous supplemental inspection was conducted for this issue; however, it was discontinued because the NRC determined the Root Cause Analysis and corrective actions were inadequate to support closure of the White finding. The results of that inspection were documented in Inspection Report No. 50-387/02-009, 50-388/02-09. Subsequently, the licensee conducted a second root cause analysis which was reviewed during this supplemental inspection in accordance with Inspection Procedure 95001. The inspector determined that the licensee performed a comprehensive evaluation of the on-shift staffing issue. The licensee's evaluation identified the following root causes of the staffing issue: (1) less than adequate management understanding of EP requirements; (2) inadequate EP reference in Procedure No. NDAP-QA-0300; (3) Operations did not fully investigate and pursue short term staffing alternatives; (4) insufficient Operations ownership and support of EP; (5) EP revision process less than adequate; and (6) failure to implement existing commitment tracking control. The staffing issue was not limited to the EP area, and the licensee has taken corrective actions to ensure that on-shift staffing meets the requirements of the E-Plan. As a result of the root cause analysis, the licensee broadened their extent of condition review to ensure that all NRC regulations and industry commitments were being met in all program areas and their associated procedures. Given the licensee's acceptable performance in addressing the on-shift staffing issue, the white finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in IMC 0305, "Operating Reactor Assessment Program." Implementation of the licensee's remaining corrective actions may be reviewed during future inspections.

Inspection Report# : [2001006\(pdf\)](#)

Inspection Report# : [2002009\(pdf\)](#)

Inspection Report# : [2002010\(pdf\)](#)

 **Significance:** Sep 30, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Emergency Action Level Changes**

The inspectors identified a non-cited violation for failure to follow and maintain the emergency plan as required by 10 CFR 50.54(q) and 10 CFR 50 Appendix E, "Emergency Planning and Preparedness." This violation was of very low safety significance because some inconsistencies between the Emergency Plan and emergency classification procedures resulted in the NRC receiving an event classification reference that did not agree with the actual event.

Inspection Report# : [2001009\(pdf\)](#)

 **Significance:** Aug 16, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate procedures in place to describe the communication steps needed to alert or activate emergency personnel**

The inspectors identified a non-cited violation for failure to adequately describe, in approved procedures, the communication steps needed to alert or activate emergency personnel under each class of emergency. (10 CFR 50.47(b) (5), "Emergency Plan Procedures," and 10 CFR 50 Appendix E, Section IV C., "Activation of Emergency Organization") This violation was of very low safety significance because some inadequacies contained in the control room communicator emergency procedure may have contributed to a delayed notification of emergency response personnel. The delayed notification contributed to emergency response facility activation times in excess of the emergency plan requirements.

Inspection Report# : [2001008\(pdf\)](#)

**Significance:**  Nov 06, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

#### **Failure to Meet the Regional 90 Minute EOF Activation**

During the 1997 biennial exercise, (IR 50-387;388/97-08) it was identified that the emergency operations facility (EOF) was not able to assume control of the emergency within 90 minutes of the Alert declaration. Had the emergency started at the site area emergency level, the licensee would not have met its commitment in the emergency plan of activation within 90 minutes. During this exercise, the licensee was not able to meet the 90 minutes activation goal for the EOF from the time of emergency response organization notification. The licensee has reviewed this issue but has not been able to adequately correct the problem. This is contrary to 10 CFR 50.47b(14) which states that "Periodic exercises are conducted to evaluate major portions of emergency response capabilities.....and deficiencies identified as a result of exercises or drills are (will be) corrected." This issue was evaluated under the SDP process as a failure to implement a regulatory requirement and the failure does not appear to be programmatic. Therefore, the issue was determined to be of very low safety significant (Green) and is a non-cited violation.

Inspection Report# : [2000010\(pdf\)](#)

**Significance:**  Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Emergency Action Level for Reactor Coolant System Leakage Change Without NRC Approval**

In 1984, PPL departed from the guidance in NUREG-0654, Criteria for Preparation and Evaluation of Radiological Response Plans and Preparedness in Support of Nuclear Power Plants. According to NUREG-0654, an initiating condition for an alert would be "primary coolant leakage rate greater than 50 gpm." PPL originally used that criteria but later added the phrase "for greater than four hours." There was no 10 CFR 50.54(q) evaluation documentation to support the licensee's change nor documentation of NRC approval of the change. Although, licensee's expectation is for an alert to be declared as soon as a greater than 50 gpm leak is identified, the wording of the initiating conditions allows for a four hour delay in declaration and thus decreases the effectiveness of the emergency plan and is contrary to 10 CFR 50.54(q).

Inspection Report# : [2000007\(pdf\)](#)

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## **Occupational Radiation Safety**

**Significance:**  Dec 31, 2000

Identified By: NRC

Item Type: VIO Violation

#### **Failure to Conduct an Adequate Radiological Survey in Accordance with 10 CFR 20.1501**

During the period September 2000 through December 14, 2000, workers performed work on irradiated reactor hardware disposal equipment and tools, contaminated with highly radioactive particles on the refueling floor. While PPL took action to evaluate some aspects of the radiological hazards posed by these highly radioactive particles, PPL's

organization and program: (1) did not adequately evaluate and characterize the radiation exposure hazards posed by these particles; and (2) did not establish and implement adequate radiological controls to prevent shallow-dose and deep-dose equivalent personnel exposure from exceeding regulatory requirements. While no personnel exposures in excess of 10 CFR 20 occupational limits are known to have occurred, the radiological conditions were such that a minor alteration in exposure circumstances could result in personnel exposure in excess of regulatory limits. Failure to effectively evaluate the radiological hazard as necessary to assure that the regulatory dose limits of 10 CFR 20.1201 were not exceeded is an apparent violation of 10 CFR 20.1501(a). This issue was assessed using the Occupational Safety Significance Determination Process (SDP) described in NRC Inspection Manual Chapter (IMC) 0609, Appendix C, and characterized as a preliminary WHITE finding. By letter dated March 12, 2001, EA-01-012, the NRC has determined that the event should be assessed as White, an issue with low to moderate increased importance to safety. This results in a White finding. During the supplemental inspection performed in accordance with Inspection Procedure 95001, IR 05000377&378/2001-007) the inspector determined that the licensee performed acceptable evaluation of the radiological significance of the hazards associated with the presence of highly radioactive particles. The inspection determined that PPL Susquehanna's efforts in characterizing problems associated with effective radiological control of discrete radioactive particles, evaluating the root and contributing causes that led to substantial potential for personnel exposure in excess of the regulatory limits, and subsequently discerning appropriate corrective measures to prevent recurrence were acceptable. Appropriate actions were initiated to further develop root causes associated with hydrolazing of equipment prior to removal from underwater storage and use locations. The extent of condition review was adequately accomplished, and corrective actions were sufficient to address identified root and contributing causes. Due to the licensee's acceptable performance in addressing the characterization and control of highly radioactive particles, the White finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in IMC 0305, "Operating Reactor Assessment Program." Implementation of the licensee's corrective actions will be reviewed during a future inspection.

Inspection Report# : [2000009\(pdf\)](#)

Inspection Report# : [2001007\(pdf\)](#)

**Significance:**  Dec 31, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

**Failure to Post a High Radiation Area**

10 CFR 20.1501(a)(1), requires that surveys be made to comply with the regulations in 10 CFR Part 20 including 10 CFR 20.1902(b) for posting of high radiation areas (defined as an area greater than 100 mR/hr at 30 centimeters(cm)). On November 12, 2000, a shipping cask had not been surveyed properly and, as a result, an area measuring 700 mR/hr at 30 centimeters was undetected and constituted an unposted high radiation area. This event is documented in Condition Report No. 297422.

Inspection Report# : [2000009\(pdf\)](#)

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## Public Radiation Safety

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## Physical Protection

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## Miscellaneous

**Significance:**  Sep 28, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

**Excessive Worker Overtime**

The inspectors identified a non-cited violation of Technical Specification 5.2.2.e for failure to maintain adequate shift coverage without routine heavy use of overtime to meet the objective of operating personnel working a nominal 40 hour week while both units are operating. A majority of operations personnel have routinely worked in excess of approximately 50 hours per week (25% overtime) to provide adequate shift coverage while both units are operating. This violation of Technical Specification Section 5.2.2.e, "Administrative Controls - Unit Staff," is greater than minor because if left uncorrected the excessive work hours would contribute to an increased likelihood of human performance errors during normal operation and plant events. The finding is not suitable for SDP evaluation, but has been reviewed by NRC management and is determined to be a Green finding of very low significance, and is not greater than very low significance because there were no significant events or human performance issues that were linked directly to personnel fatigue as a result of the hours worked.

Inspection Report# : [2002005\(pdf\)](#)

**Significance:** TBD Sep 28, 2002

Identified By: NRC

Item Type: AV Apparent Violation

**Spent Fuel Cannister Filled with Wrong Gas**

An apparent violation (severity level yet to be determined) was identified that resulted in an unanalyzed condition for the spent fuel dry storage system. PPL filled a spent fuel storage cannister with Argon and Helium gases instead of using all Helium gas as required by the Certificate of Compliance No. 1004 for the NUHOMS-52B Dry Cask Fuel Storage System. The 10 CFR Part 72 Technical Specification 1.2.3, "24P and 52B DSC Helium Backfill Pressure," requires a helium backfill pressure of 2.5 pounds per square inch (psig) +/- 2.5 psig (stable for 30 minutes after filling). This issue is considered an apparent violation that resulted in an unanalyzed condition for a storage system designed to prevent or mitigate a serious safety event being degraded to the extent that a detailed evaluation was required to determine its operability. The issue is being considered for escalated enforcement in accordance with the NRC Enforcement Policy, NUREG 1600, Supplement VI, "Fuel Cycle and Materials Operations."

Inspection Report# : [2002005\(pdf\)](#)

**Significance:** N/A Mar 30, 2002

Identified By: NRC

Item Type: FIN Finding

**A performance trend which appears to have developed in the barrier integrity and mitigating systems safety cornerstone areas with plant equipment operator errors being the common element**

The inspector identified a finding regarding a performance trend which appears to have developed in the barrier integrity and mitigating systems safety cornerstone areas with non-licensed plant operator errors being the common element.

Inspection Report# : [2002002\(pdf\)](#)

**Significance:** N/A Feb 01, 2002

Identified By: NRC

Item Type: FIN Finding

**Biennial Problem Identification and Resolution**

The team concluded that, based on the samples reviewed, the overall implementation of the corrective action program at Susquehanna was acceptable. The licensee was identifying problems at an appropriate threshold and entering them into their corrective action program. The backlog of corrective actions was adequately managed, however, corrective action due dates were frequently extended. The actions taken for identified problems were adequate to correct the problem and prevent recurrence. The licensee's evaluations of problems were of adequate depth to identify the causes and appropriately broad in considering the extent of condition. However, the team noted a number of personnel errors at both units within the last year. The type of errors included wrong unit, wrong equipment, and missed procedure steps. While PPL management recognized that a performance issue was apparent in this area and initiated several efforts to decrease the errors, the team noted that these efforts to date have not been fully effective.

Inspection Report# : [2001013\(pdf\)](#)

**Significance:** N/A Dec 01, 2000

Identified By: NRC

Item Type: FIN Finding

### **Effectiveness of Problem Identification and Resolution Program**

The team concluded, based on the samples reviewed, that the implementation of the corrective action program at Susquehanna was adequate. Generally, the Susquehanna staff appropriately identified and entered problems into the condition report (CR) system. There was a low threshold for initiation of CRs. A recent initiative was a focused review of the CR database to identify adverse trends in performance. CRs were generally classified at the correct significance level and the actions identified on the CRs were generally adequate. The engineering and maintenance backlogs appeared to be adequately managed. The depth of the PPL analysis for the apparent and root causes of problems were generally appropriate. However, the team noted that the cause determination for certain relay failures was unsupported. The team also noted a separate example where corrective actions were not re-evaluated when subsequent relay failures occurred.

Inspection Report# : [2000006\(pdf\)](#)

**Significance:** N/A Nov 06, 2000

Identified By: Licensee

Item Type: FIN Finding

### **Untimely General Emergency Declaration and Overly Conservative Dose Projections**

Two problems were identified by the licensee from their critique in the dose assessment area. One was an error in dose projection calculation and the other was a potentially overconservative default dose projection. Both reflect a risk significant planning standard implementation problem. It is a finding due to extenuating circumstances - potential generic issue based on observations at recent exercises.

Inspection Report# : [2000010\(pdf\)](#)

**Significance:** N/A Aug 12, 2000

Identified By: NRC

Item Type: FIN Finding

### **Missed 10 CFR 50 Appendix J Testing**

Performance deficiencies in communications and coordination between engineering groups had allowed the failure to perform Technical Specification required leakage tests on the Hydrogen/Oxygen Analyzer System to remain unidentified for an extended period of time. Specifically, the group that was knowledgeable of the leakage rate testing program requirements did not understand the Hydrogen/Oxygen Analyzer System primary containment isolation valve design configuration and the groups that were knowledgeable of the primary containment isolation valve configuration design did not understand leakage rate testing program requirements. PPL determined that they had multiple opportunities to identify this issue from August 1996 until February 2000.

Inspection Report# : [2000005\(pdf\)](#)

**Significance:** SL-IV Aug 12, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Demonstrate Adequate System Performance as Required by the Maintenance Rule**

PPL failed to demonstrate that the performance of the Turbine Building Closed Cooling Water (TBCCW) system and the secondary containment isolation system had been effectively controlled through the performance of appropriate preventive maintenance and did not monitor against established goals. PPL did not identify that the TBCCW heat exchangers had exceeded their unavailability performance criteria and the secondary containment isolation system had exceeded its reliability performance criteria and, as a result, goal setting and monitoring were not performed as required by 10 CFR 50.65, "The Maintenance Rule." The actual safety significance of this issue was very low because (1) TBCCW remained functional at the system level, and (2) a failure of the secondary containment isolation system does not influence the likelihood of an accident leading to core damage and does not affect the probability of an early primary containment failure. The inspectors identified a Non-Cited Violation for failure to meet the criteria in 10 CFR 50.65, paragraph (a)(2).

Inspection Report# : [2000005\(pdf\)](#)

**Significance:** SL-IV Aug 12, 2000

Identified By: NRC



Item Type: NCV NonCited Violation

**Inadequate Control of Worker Overtime**

PPL did not adequately control the use of worker overtime in accordance with Technical Specification Section 5.2.2.e, "Administrative Controls - Unit Staff." Specifically, from February 11, 1999 to May 5, 1999, several plant personnel worked in excess of 72 hours in a seven day period and PPL did not pre-approve the overtime deviations. The safety significance of this violation was very low because there were no issues that were linked to personnel fatigue. The inspectors identified a Non-Cited Violation for failure to control worker overtime, as required by Technical Specifications.

Inspection Report# : [2000005\(pdf\)](#)

Last modified : December 02, 2002